

FEASIBILITY STUDY

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US 401 from
NC 55-42 Northward to Existing
Four-lane Divided Section
Wake County
R-2416

Prepared by
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to Existing Four-lane Section
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The subject project is included in the 1989-1996 Transportation Improvement Program for feasibility study and/or right-of-way protection. This report provides a brief, initial analysis of possible improvements. The project is not currently funded.

I. GENERAL DESCRIPTION

The portion of US 401 studied in this report is located on the north side of Fuquay-Varina in Wake County (see Figure 1). The project extends from NC 55-42 northward to the existing four-lane section, a distance of 1.8 miles.

US 401 is currently planned to be widened from NC 42-55 southward to the existing curb and gutter section in Fuquay-Varina, a distance of 1.9 miles. Construction of this TIP project (R-2026) is scheduled to begin in FY 1991. Completion of R-2026 will leave 1.8 miles of US 401 to the north remaining as a two-lane roadway. This study examines widening this section to a multi-lane facility.

II. PURPOSE OF PROJECT

Existing Conditions

US 401 is designated as a minor arterial in the Functional Classification System. The facility serves as the principal north-south route in southern Wake County and connects Fuquay-Varina with Raleigh.

The estimated 1989 average daily traffic volumes along this section of US 401 vary from 15,900 vehicles per day on the northern segment of the project to 17,000 vpd on the southern segment of the project and are projected to increase to 28,600 vpd and 30,500 vpd, respectively, in the year 2009. This traffic includes 3% truck tractor semitrailer and 4% dual tired trucks.

The existing pavement along the subject roadway is 22 feet wide and is in good condition. North of the studied section, US 401 widens to a four-lane divided facility with a 30 to 35 foot grassed median. To the south, US 401 is planned to be widened to a five-lane facility with curb and gutter.

An overpass of the Norfolk and Southern Railway crosses US 401 just north of NC 42-55. The structure must be replaced to accommodate a multi-lane facility, because its horizontal clearance is only 40 feet.

Claimed right of way widths along the subject roadway varies from 150 feet to about 80 feet. Because some right of way agreements were never recorded, valid right of way will probably be limited to maintenance limits on certain parcels. Generally, existing right of way is offset to the west to allow future widening to a 4-lane divided facility along the northern half of the 1.8-mile section, but is symmetrical along the southern half.

A study of reported accidents during the period from January, 1985 through October 1988 indicates a total of 58 accidents. The majority of these accidents resulted from a rear-end collision. An accident rate of 178 accidents/100 million vehicles miles was obtained for the 1.8 mile segment of US 401 which is below the statewide average rate of 198 acc/100 mvm for two-lane rural US Routes. The intersection of US 401 and NC 42-55 experienced the highest concentration of accidents (14).

Need for Improvements

Immediate improvements to the studied section are warranted to provide additional capacity for increasing volumes of traffic. The existing facility is currently operating below the minimum desirable level of service. Provision of additional lanes are needed to avoid congestion and unacceptable operating conditions for the planning period.

Implementing this project would close the two-lane gap between existing and planned multi-lane sections of US 401.

III. RECOMMENDED IMPROVEMENTS

The existing alignment should be used to improve US 401. No relocations are necessary due to the directness of the route.

Two cross section designs should be used in widening this facility. The northern 0.8-mile portion should be widened to a four-lane divided section by constructing two lanes to the west with paved shoulders and a grassed median. The southern 0.8-mile portion should be widened to a five-lane facility with curb and gutter. Approximately 0.2 mile would involve a transition between the four-lane divided and the five-lane curbed section.

Widening the southern 0.8-mile portion to five lanes with curbs rather than a four-lane divided section would reduce the cost of replacing the railway overpass and minimize right of way costs.

The estimated construction cost for widening this facility is \$3,350,000, which includes \$1,023,000 to replace the Norfolk and Southern Railway overpass. Extra right of way would be required along approximately 0.8 mile of this section at a cost of \$368,000. Thus, total estimated cost of the project is \$3,718,000.

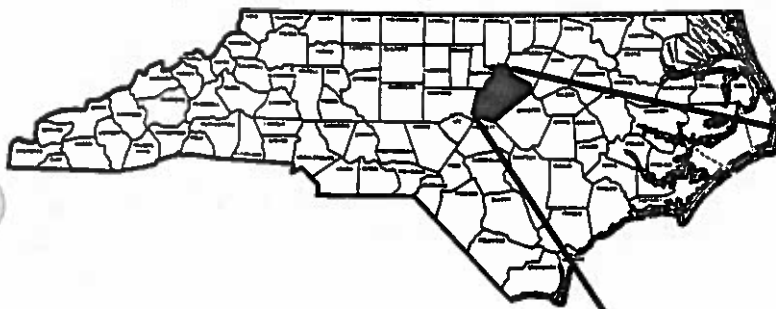
IV. POSSIBLE ENVIRONMENTAL IMPACTS

No significant adverse environmental impacts are anticipated if the recommended improvements are implemented. During construction of the project, some minor erosion and siltation of drainage ditches could occur. No special permits or coordination are likely to be required. Some increase in noise levels may result from construction of the project.

V. FUTURE ACTIVITIES

If the project is to be implemented at a future date, all feasible alternatives and their associated impacts will need to be evaluated in a planning-environmental document prior to that time, and a final decision made as to the most appropriate improvement.

LC/sdt



NORTH CAROLINA DEPARTMENT OF
TRANSPORTATION
DIVISION OF HIGHWAYS
PLANNING AND RESEARCH BRANCH

US 401
FROM NC 42-55
TO EXISTING FOUR LANES
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